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EXAMINER	
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2889	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,389	PULLINI ET AL.	
	Examiner	Art Unit	
	FATIMA N. FAROKHROOZ	2889	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-54,57 and 58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-54 and 57-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed on 06/26/08 is acknowledged. Claims 29-54 and 57-58 remain pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 29-41, 43-46, 48-50, 53-54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 5152870) in view of Fleming et al (US 6768256), and further in view of Richard (GB 2032173).

Regarding Claim 29, Levinson teaches: An incandescence emitter for incandescence light sources (Fig. 1, 2, col.2, lines 50-55) comprising an emitter body to be brought to incandescence at an operating temperature by means of passage of electric current, wherein on at least one surface of the emitter body a micro-structure is provided (col.3, lines 30-40, also see col.3, lines 57-69 wherein the filament 2 in Fig. 1, 2 is **made of tungsten**).

Levinson does not teach that the micro-structure (R) is at least partly made of a material (Au) whose melting temperature is lower than the operating temperature of the emitter body (also see col.3, lines 57-69 wherein the filament 2 in Fig. 1, 2 is made of

tungsten); wherein it is coated with an oxide and wherein the emitter is operative to enhance absorbance for wavelength belonging to the visible region of the spectrum.

In the same field of endeavor of emitters, the added Fleming reference teaches that an emitter (col.3,line 66 to col.4;line 5; also see for emitter in col.4;line 58 to col.5,line 15;col.11;lines 25-41) can be made of a material such as *gold* see col.13,lines 25-35) in order to obtain ***enhanced light emission.*** Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the emitter material, as disclosed by Fleming, in the device of Levinson in order to obtain ***enhanced light emission.***

Further, the above combination does not teach that at least a substantial portion of the emitter body including said micro-structure (R), is coated with an oxide with high melting point (OR), such as a refractory oxide, said oxide being configured to preserve a profile of said microstructure in case of melting of the respective material (Au), consequent to the use of the emitter body at an operating temperature exceeding the melting temperature of said material (Au).

In the same field of endeavor, the added Richard reference teaches an incandescent lamp filament that is coated with an oxide with high melting point (OR), such as a refractory oxide (see page 1, lines 30-60) in order to achieve **stability** at all temperatures at least up to the temperature attained by the filament in operation of the lamp (page 1, see **Abstract and page 1, lines 83-95**). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to add the emitter

coating , as disclosed by Richard, in the emitter of the previous combination in order to achieve **stability** at all temperatures at least up to the temperature attained by the filament in operation of the lamp.

Further, although the combined structure of Levinson, Fleming and Richard teaches that ***visible light*** is emitted by the emitter with improved efficiency (col.5; lines 43-48 of Levinson); the combined structure does not explicitly teach that the emitter is operative to enhance absorbance for wavelengths belonging to the visible region of the spectrum. However, since the claimed invention has the same structure as the ***combined structure*** of Levinson, Fleming and Richard, therefore function such as the emitter is operative to enhance absorbance for wavelengths belonging to the visible region of the spectrum is considered to be inherent and expected by the combination.

Regarding claim 30; the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said oxide (OR) is arranged to preserve the profile of said microstructure (R) also from effects of evaporation of the respective material (W; Au; W, Au) at the operating temperature (as disclosed by Richard in **Abstract and page 1; lines 83-95**). Also see rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 31; the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein the emitter body (F) is almost completely coated by said

refractory oxide (OR), with the exception of respective areas for connection to electrodes of the emitter. (See page 1; lines 45-50 of Richard wherein only the emitting body is coated with the refractory oxide. Also, see rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 32, the combined structure of Levinson; Fleming and Richard teaches an emitter, wherein said micro-structure (R) is made of a conductor **(W)** (see col.3, lines 57-69 of Levinson wherein the filament 2 in Fig. 1,2 is made of **tungsten** and **gold** is disclosed as the emitter material by Fleming), whose optical constants, combined with the shape of the micro-structure (R), are such as to allow a higher luminous emission efficiency than a classic incandescence filament, said efficiency being defined as the ratio between the fraction or visible radiation emitted at the operating temperature in the interval 380 nm-780 nm and the fraction of radiation emitted at the same temperature in the interval 380 nm -2300 nm (see col.5,lines 42-60; also see Background of the invention in col.1,lines 10-65 of Levinson).

Regarding claim 33, the combined structure of Levinson, Fleming and Richard implicitly teaches an emitter, wherein the material (Au) is selected among conductor, semiconductor and composite materials whose melting point is lower than the operating temperature of the filament (F; since Levinson teaches tungsten material and Fleming teaches gold; therefore the combined structure teaches the melting point and

the operating temperatures) (see rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 34, wherein the emitter is formed by at least a first layer of conductor material (W), melting at higher temperature than the operating temperature of the emitter body (F), such as tungsten, and by a second layer of material (Au) whose melting point is lower than the operating temperature of the emitter body (F) , since Levinson teaches a tungsten material for the emitter and Fleming teaches gold in order to enhance light emission; use of combination of the above materials is only considered to be the use of a " preferred " or " optimum " materials out of a plurality of well known materials that a person having ordinary skill in the art at the time the invention was made would have find obvious to provide using routine experimentation based, among other things, on the intended use of Applicant's apparatus, i.e., suitability for the intended use of Applicant's apparatus. (See rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 35, the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said micro-structure (R) is at least partly formed with **gold** (gold is disclosed by Fleming as emitter material; see rejection in claim 29 and **34** above, the same reason to combine art as in claim 29 applies).

Regarding claim 36, Richard teaches an emitter, wherein said refractory oxide (OR) is selected from among ceramic base oxides, thorium, zirconium oxide (see col.1,lines 50-60 and on page 1 see (57); also see rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 37, Levinson teaches an emitter, wherein said micro-structure (R) is formed by a superficial micro-structure of the emitter body (F), i.e. in the same material which constitutes the emitter body (F) (see col.1, lines 55-65; also see background of the invention in col.1, lines 5-65; see rejection in claim 29 above, the same reason to combine art as in claim 29 applies).

Regarding claim 38, the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said micro-structure comprises a diffraction grating (R), having at least one of a plurality of pillar micro-projections and a plurality of micro-cavities ;where the dimensions of the pillar like micro-projections or the micro-cavities and the period (P) of the grating (R) are such to enhance emission of visible electromagnetic radiation from the material (W; Au; W, Au) constituting at least the micro-structure (R; **see col.5,lines 42-50 and col.3,line 58 to col.4;line 4** in Levinson), and/or reduce emission of infrared electromagnetic radiation from the material (W; Au; W, Au) constituting at least the micro-structure (R), and/or enhance emission of the infrared electromagnetic radiation from the material (W; Au; W, Au as disclosed by Levinson and Fleming) constituting at least the micro-structure to a lesser

extent with respect to the increase in visible emissivity (see rejection in claim 29 above, the same reason to combine art as in claim 29 applies; also see rejection in claim 32 above).

Regarding claim 39, the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said grating (R) is obtained with a first conductor material (W) melting at higher temperature than the operating temperature of the emitter body (F), the first material having a structured part, a coating layer (Au disclosed by Fleming) which covers at least the structured part of said first material (W disclosed by Levinson), the coating layer being of a second material (Au) selected among conductor, semiconductor or composite materials melting at lower temperature than the operating temperature of the emitter body (F), where the coating layer (Au) copies the profile of the structured part of the first material (W), to form therewith said grating (R), and the second material (Au) ***has a greater emission efficiency*** (as disclosed by Fleming) than the first material (W), said efficiency being defined as the ratio between the fraction of visible radiation emitted at the operating temperature in the interval 380 nm-780 nm and the fraction of radiation emitted at the same temperature in the interval 780 nm-2300 nm (see rejection in claim 29 above, the same reason to combine art as in claim 29 applies; also see rejection in claim 32 and **34 above**).

Regarding claim 40, the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said grating (R) is obtained on the surface of a layer (Au) of a first conductor, semiconductor or composite material whose melting point is lower than the operating temperature of the filament (F), said layer (Au; gold material for the emitter is disclosed by Fleming for enhanced light emission) is placed on a second conductor material (W) whose melting point is higher than the operating temperature of the emitter body (F), where the first material (Au) has higher emission efficiency than the second material (W; tungsten material for the emitter is disclosed by Levinson), said efficiency being defined as the ratio between the fraction of visible radiation emitted at the operating temperature in the interval 380 nm-780 nm and the fraction of radiation emitted at the same temperature in the interval 380 nm-2300 nm (see rejection in claim 29 above, the same reason to combine art as in claim 29 applies; also see rejection in claim 32).

As to the grounds of the rejection under section 103(a) with respect to claims 39 and 40, the function and/or use of I) the coating layer (Au) copies the profile of the structured part of the first layer of refractive oxide, to form therewith said grating (R), and the second material (Au) has a greater emission efficiency than the first material (W), said efficiency being defined as the ratio between the fraction of visible radiation emitted at the operating temperature in the interval 380 nm-780 nm and the fraction of radiation emitted at the same temperature in the interval 780 nm-2300 nm (claim 39); and II) where the first material (Au) has higher emission efficiency than the second material (W), said efficiency being defined as the ratio between the fraction of visible

radiation emitted at the operating temperature in the interval 380 nm-780 nm and the fraction of radiation emitted at the same temperature in the interval 380 nm-2300 nm (claim 40) are considered to be the inherent characteristics of the device that meets the structural limitations as disclosed by the combined structure of Levinson, Fleming and Richard.

Regarding claim 41, the combined structure of Levinson, Fleming and Richard teaches an emitter, wherein said grating (R) is obtained with a first layer of refractory oxide (OR; as disclosed by Richard) having a structured part, a coating layer (Au) which covers at least the structured part of the first layer of refractory oxide (OR), the coating layer being of a material (Au; Gold emitting material as disclosed by Fleming) selected among conductor, semiconductor or composite materials melting at lower temperature than the operating temperature of the emitter body (F), where the coating layer (Au) copies the profile of the structured part of the first layer of refractory oxide to form therewith said grating (R), and where the coating layer (Au) is in turn coated by an encapsulating layer constituted by refractory oxide (OR) (see rejection in claim 29 above, the same reason to combine art as in claim 29 applies; also see rejection in claims 31 and **34 above**).

Regarding claim 43, Levinson teaches an emitter wherein the periodicity of the micro-projections (R1, R2) or of the micro-cavities (C) is of the order of the wavelength

of visible radiation (see col.1, lines 55-65; see 0.15 and 0.35 micrometers; also see col.5, lines 26-42).

Regarding claim 44, Levinson teaches an emitter, wherein the periodicity of the micro-projections (R1, R2) or of the micro-cavities (C) is between 0.2 and 1 micron (see col.5, lines 26-42).

Regarding claim 45, Levinson teaches an emitter, wherein the height or depth of the micro-projections (R1, R2) or of the micro-cavities (C) is between 0.2 and 1 micron (see col.5, lines 26-42).

Regarding claim 46, Levinson teaches an emitter, wherein said micro-structure (R) is binary, i.e. with two levels (see Fig.1, 2; the two levels correspond to the top and bottom of height h in Fig.2).

Regarding claim 48, Levinson teaches an emitter wherein the micro-structure 5 (R) has a continuous projection (see projections 5 in Fig.2, col.3, lines 32-57 .Examiner Note: The examiner interprets continuous projection of the micro-structure as continuously projecting or going up continuously without any discontinuities (kinks) on the sides of the wall 5 in Fig.2).

Regarding claim 49, the combined structure of Levinson, Fleming and Richard implicitly teaches an emitter, wherein it operates at a lower temperature than the melting point of the refractory oxide (OR). **(Examiner Note: melting point properties for tungsten; gold and Refractory oxide disclosed by Levinson, Fleming and Richard, respectively is implied and inherent).** Also see rejection in claim 29 above, the same reason to combine art as in claim 29 applies.

Regarding claim 50, Levinson teaches an emitter, wherein it is configured as a filament or planar plate structured under the wavelength of visible light (Fig.1, col. 3,lines 32-57,also see rejection in claim 32 and col.5,lines 42-60), and in that said micro-structure (R) is a two-dimensional grating of absorbing material (k>1; col.5,lines 15-60 and 43-60; see 5 in Fig.3E wherein the material is listed in col.5,lines 42-60).

Regarding claim 53, see rejection in claim 29 above. The same reason to combine art as in claim 29 applies wherein the method of constructing the emitter results in the emitter structure of claim 29.

Further, the combined structure of Levinson, Fleming and Richard teaches a method for constructing an incandescence emitter capable of being brought to incandescence by passage of electric current, comprising the steps of:
obtaining a filiform or laminar body of the material whereof the emitter is
to be made; said material (Au as disclosed by Fleming) having a melting temperature lower than the operating temperature at which the emitter (F) is meant to be used;

etching said body to form an anti-reflection micro-structure (R). (see Fig.4 (A)-(D) that describes the method of etching the micro-structure from over the filiform: see col.5, line 60 to col.6, line 30 of Levinson). Also Richard teaches coating the emitter (F) with a refractory oxide (OR).

Regarding claim 54, the combined structure of Levinson, Fleming and Richard implicitly teaches an incandescent light emitter body, brought to incandescence by the passage of electric current. (see rejection in claim 29 above. The same reason to combine art as in claim 29 applies).

Regarding claim 57, Levinson teaches an emitter; wherein the micro-structure comprises a diffraction grating consisting of a plurality of pillar-like micro-projections (see at least Fig.4D;Note: The diffraction grating is interpreted as a plurality of periodic pillar-like micro-projections as disclosed by Levinson).Also see rejection in claim 38 above.

Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 5152870) , in view of Fleming et al (US 6768256) and Richard (GB 2032173) as applied to claims 29-41, 43-46, 48-50, 53-54 and 57; further in view of Gee et al (US 20030132705).

Regarding Claim 47, the combined structure of Levinson, Fleming and Richard teaches the invention set forth above (see rejection in Claim 29 above). The

combination is silent regarding an emitter, wherein said micro-structure (R) is multi-level, i.e. it has a projection with more than two levels.

In the same field of endeavor of emitters for incandescent lamps, the added Gee reference teaches an emitter wherein the micro-structure (R) is multi-level, i.e. it has a projection with more than two levels (see stacked tungsten rods 370 in Fig. 3i ;also see [0009],[0014]-[0018],[0023],[0027],[0029],[0036]-[0040]) in order to selectively emit thermal radiation in the visible and near-infrared portions of the spectrum thereby enabling a more efficient incandescent lamp ([0009]). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the emitter as disclosed by Gee, in the device of the previous combination in order to selectively emit thermal radiation in the visible and near-infrared portions of the spectrum thereby enabling a more efficient incandescent lamp.

Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 5152870) , Fleming et al (US 6768256) and Richard (GB 2032173) as applied to claims 29-41, 43-46, 48-50, 53-54 and 57; further in view of Fujishima et al (US 20020096107) .

Regarding Claim 51, the combined structure of Levinson, Fleming and Richard teaches the invention set forth above (see rejection in Claim 29 above, the same reason to combine art as in claim 29 applies). Further Levinson teaches the method of constructing an incandescent light emitter by etching (see Fig.4 (A)-(D) in Levinson that

describes the method of etching the micro-structure from over the filiform: see col.5, line 60 to col.6, line 30).

The combination is silent regarding a method for constructing an incandescent light emitter to be brought to incandescence by passage of electric current, comprising the steps of: a) constructing a template of porous alumina, b) infiltrating the template of porous alumina with a material destined to constitute an incandescence emitter body (F), in such a way that the alumina structure serves as a mould for at least part of an anti-reflection micro-structure (R) of the incandescence emitter body (F), said material (Au) having a melting temperature lower than the operating temperature at which the incandescence emitter body (F) is meant to be used, c) depositing a refractory oxide (CR) onto the remaining part of the incandescence emitter body (F) destined to extend between two respective electrodes (H), said oxide being operative to preserve a profile of said microstructure (R) in case of melting of the respective material (Au), consequent to the use of the incandescence emitter body (F) at an operating temperature exceeding the melting temperature of said material (Au), wherein the template of porous alumina is maintained or else eliminated prior to step c).

In the same field of endeavor, the added Fujishima reference teaches a method for constructing an electron emission source (diamond ,[0004]) comprising a) constructing a template of porous alumina,([0006]-[0007],also see [0024] –[0033];also see [0037] wherein the alumina is dissolved) b) infiltrating the template of porous alumina with a material destined to constitute the emitter (F), in such a way that the alumina structure serves as a mould in order to achieve minimized size of the electron

emission source ([0005]). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the method as disclosed by Fujishima, for the device of the previous combination in order to achieve minimized (microstructure) size of the electron emission source.

Further, the previous combination does not teach depositing a refractory oxide (CR) onto the remaining part of the incandescence emitter body (F) destined to extend between two respective electrodes (H), said oxide being operative to preserve a profile of said microstructure (R) in case of melting of the respective material (Au), consequent to the use of the incandescence emitter body (F) at an operating temperature exceeding the melting temperature of said material (Au), wherein the template of porous alumina is maintained or else eliminated prior to step c). The Richard reference teaches depositing a refractory oxide (CR) onto the emitter (F) (also see rejection in claim 29, wherein the method of constructing results in product of claim 29).

Regarding claim 52, Fujishima teaches the step a) comprises the deposition of an aluminum film, with thickness in the order of one micron, on a suitable substrate and the subsequent anodisation thereof, said anodisation comprising at least: a first phase of anodisation of the alumina film; a phase of reducing the irregular alumina film obtained as a result of the first anodisation phase ([0006]).

Regarding, a second phase of anodisation of the alumina film starting from the residual part of irregular alumina not eliminated by said reduction phase Fujishima discloses a first step of anodization. It would have been obvious to a person having

ordinary skill in the art at the time the invention was made to provide a second phase of anodization, since mere duplication of the essential working parts of a device involves only routine skill in the art.

Claims 42 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 5152870) , Fleming et al (US 6768256) and Richard (GB 2032173) as applied to claims 29-41, 43-46, 48-50, 53-54 and 57; further in view of Tanaka et al (US 6281629).

Regarding Claims 42 and 58, the combined structure of Levinson, Fleming and Richard teaches the invention set forth above (see rejection in Claim 29 above). The combination is silent regarding an emitter, wherein at least a throat or cavity (G) is provided, open on the material constituting the emitter body (F) and defined in a) the refractory oxide (for claim 42) at least one of said electrodes (H) (for claim 58), the cavity or cavities (F) receiving part of said material as a result of volume expansions thereof.

In the same field of endeavor of lamps, the added Tanaka reference teaches an electrode support 5b (see Fig.2 and 4; col.2; lines 59-65) wherein the support is held in a gap 41 (col.7; lines 3-20) in order to absorb the thermal expansion and contraction (see Fig.2 and 4; col.2; lines 59-65). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the emitter as disclosed by Tanaka, such that it is enclosed in a gap or cavity; for the refractory oxide and

electrodes of the previous combination in order to absorb the thermal expansion and contraction.

Response to Arguments

The arguments filed on 06/26/08 are acknowledged.

The Applicant has made the following arguments:

1. Levinson never mentions an increase in the absorbance of the emitter thereof; for wavelengths belonging to the visible region of the spectrum (paragraph 1 of page 10).

2. Mcmaster teaches a phototube and not an emitter (paragraph 2 of page 10 to paragraph 2 of page 11).

3. On page 12 of the Remarks, the Applicant argues that amended claim 29 now recites that the oxide is configured to preserve a profile of the microstructure in case of melting of the respective material; which the Applicant argues that the feature is not taught by Richard (see paragraph 3 of page 12 of the Remarks).

4. On pages 12 and 13, the Applicant argues that rejection of claim 34 is a result of hindsight reasoning.

5. On pages 15 and 16, the Applicant argues that Chappell teaches electrodes large electrodes. Further the claims for this limitation has been amended.

6. On page 17; the Applicant argues that the Fujishima relates to a process for manufacturing an electron emission source and not light emission.

The following are the Examiner's responses to the Applicant's arguments:

1. The Examiner does not find this argument to be persuasive, since the claimed invention as claimed in claim 29 has the same structure as the combined structure of Levinson, Fleming and Richard, therefore function such an increase in the absorbance of the emitter thereof; for wavelengths belonging to the visible region of the spectrum is inherent and expected.

2. Regarding the arguments that Mcmaster teaches a phototube and not an emitter the arguments are found to be persuasive. However, the arguments are moot in view of new grounds of rejection wherein the new prior art Fleming teaches an emitter which is made of gold in order to enhance light emission which is the same as the argument raised by the Applicant wherein Applicant discloses that gold has emitting properties that are more advantageous than tungsten (see paragraph 3 of page 11 of the Remarks).

3. The Examiner does not find this argument as persuasive, since Richard explicitly teaches that refractory coating provides stability at all temperatures at least up to the temperature attained by the filament in operation of the lamp, which clearly

means that the same refractory oxide coating as the invention is used by Richard to protect the emitter from all effects caused by high temperature including melting (see Abstract of Richard).

4. The Examiner does not find this argument to be persuasive. First of all since Levinson teaches a tungsten material for the emitter and Fleming teaches gold in order to enhance light emission; use of combination of the above materials is only considered to be the use of a " preferred " or " optimum " materials out of a plurality of well known materials that a person having ordinary skill in the art at the time the invention was made would have find obvious to provide using routine experimentation based, among other things, on the intended use of Applicant's apparatus, i.e., suitability for the intended use of Applicant's apparatus. Further; in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper.

5. New grounds of rejection with prior art Tanaka are made for the amended claims of 42 and 58 ;wherein Tanaka teaches a gap formed for the electrode support in order to accommodate thermal expansion and contraction due to high temperature.

6. However the Applicant also argues on page 18 that Fujishima teaches method for an electron emission source for use in a **display**, a gas sensor or an **electrode.** Display devices and electrodes are in the same field of endeavor as lamps since they are all either display devices or are used in display devices, and therefore it would have been obvious to one of ordinary skill in the art at the time invention was made to modify the techniques disclosed in the field of **display devices and electrodes**, for applying in display devices such as lamps.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fatima Farokhrooz whose telephone number is (571)-272-6043. The examiner can normally be reached on Monday- Friday, 9 am - 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minh-Toan Ton can be reached on (571) 272-2303. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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